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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,058	01/07/2002	Harald Kuhn	GR99P3457	4486

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EXAMINER

ANDERSON, MATTHEW A

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,058

Applicant(s)

KUHN ET AL.

Examiner

Matthew A. Anderson

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 01072 . 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1- are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuo (11-116399) in view of Shigehiro (JP 11-116398).

Yasuo discloses a graphite crucible with a inner wall lined with a TaC plate (see abstract). A method of forming the TaC plate is given as carburization of a Ta plate in a double walled furnace (fig. 2). A furnace suggests a heater outside the crucible. The crucible with its liner can be fitted with a seed crystal (21 in Fig. 4) and can hold a stock material (20). The sides are seen to face the inner zone.

The reference is silent as to the thickness of the plate.

Shigehiro discloses a crucible for SiC production with a inner lining of TaC having a thickness of greater than or equal to 10 μm .

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the references above because furnaces with graphite crucibles with inner TaC linings, seed crystal holders, and stock material areas are suggested by Yasuo and Shigehiro discloses that thin thickness of such TaC coatings are effective. Motivation to combine is that thinner Ta layers allows the economizing of the rare and expensive Ta metal.

In respect to claims 1, 4, it would have been obvious to one of ordinary skill in the art at the time of the present invention to form a furnace for producing SiC single crystals comprising: a TaC lined crucible with a seed holding area and a stock material holding area within, a heater outside that crucible, side of the crucible which face inward, and making the liner a thin foil, because such is suggested by the combined references.

In respect to claims 2,3, it would have been obvious to one of ordinary skill in the art at the time of the present invention to optimize the thickness of the TaC inner coating since such was given by Shigehiro as a result effective variable which allows better SiC single crystals to be produced and such optimization would have been achieved with only routine experimentation.

In respect to claim 6, it would have been obvious to one of ordinary skill in the art at the time of the present invention to make a double-walled crucible since such is shown in Fig. 2 of Yasuo.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuo and Shigehiro as applied to claims 1-4,6 above, and further in view of Barrett et al. (US 5,968,261).

Yasuo and Shigehiro are described above.

Yasuo and Shigehiro do not disclose the means of heating.

Barrett et al. discloses using a inductive heater (col. 6 lines 30-60) with a graphite crucible.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to combine the inductive heater of Barrett et al. with the combined references above because inductive heating was known to work with graphite crucibles. Motivation is simplified design of using previous successes.

It would have been obvious to one of ordinary skill in the art at the time of the present invention to include an inductive heater with the apparatus of claims 1 because this type of heater was known to work in the past.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Anderson whose telephone number is (703) 308-0087. The examiner can normally be reached on M-Th, 7:30-6.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (703) 305-2667. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

MAA
November 17, 2003


ROBERT KUNEMUND
PRIMARY EXAMINER